

instructions for ~~processing~~ receiving a node attachment message received from an access point, the node attachment message indicating that the node is in a vicinity of the Foreign Agent when in a first state and that the node is not in a vicinity of the Foreign Agent when in a second state;

instructions for initiating registration on behalf of the node when the node attachment message is in the first state; and

instructions for initiating de-registration on behalf of the node when the node attachment message is in the second state.

2. (Original) The Foreign Agent as recited in claim 1, wherein the node attachment message includes an IP address of the node that attached to the access point.

3. (Original) The Foreign Agent as recited in claim 1, further comprising:

instructions for sending an attachment acknowledgement message to the access point, the attachment acknowledgement message indicating that the node is fixed when the attachment acknowledgement message is in a first state and indicating that the node is mobile when the attachment acknowledgement message is in a second state.

4. (Original) The Foreign Agent as recited in claim 3, wherein the attachment acknowledgement message includes an IP address of the node that attached to the access point.

5. (Currently Amended) A Foreign Agent that supports Mobile IP, the Foreign Agent being adapted for registering a node with a Home Agent that supports Mobile IP, comprising:

a processor; and

a memory, the memory storing therein the following instructions:

instructions for ~~receiving~~ processing a node attachment arrive message received from an access point, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent;

instructions for composing a registration request on behalf of the node;

instructions for sending the registration request to the Home Agent;

instructions for ~~receiving~~ processing a registration reply received from the Home Agent in response to the registration request; and

instructions for sending an attachment acknowledgement message to the access point indicating whether the node has been registered with the Home Agent via the Foreign Agent, thereby enabling the node to receive packets via the Foreign Agent.

6. (Cancelled)

7. (Previously Amended) The Foreign Agent as recited in claim 5, further comprising:

instructions for determining from an access list whether the node is allowed to roam in a subnet of the Foreign Agent;

wherein the attachment acknowledgement message indicates that the node has access to a subnet of the Foreign Agent when the node is allowed to roam in a subnet of the Foreign Agent and otherwise indicates that the node does not have access to a subnet of the Foreign Agent.

8. (Original) The Foreign Agent as recited in claim 5, wherein the attachment acknowledgement message indicates whether the access point is instructed to redirect packets sent by the node to a MAC address of the Foreign Agent, thereby enabling the node to send packets via the Foreign Agent.

9. (Original) The Foreign Agent as recited in claim 5, wherein the attachment acknowledgement message indicates that the access point is instructed to provide fixed wireless connectivity when in a first state and to provide proxy mobility service when in a second state.
10. (Original) The Foreign Agent as recited in claim 5, wherein the node supports Mobile IP.
11. (Original) The Foreign Agent as recited in claim 5, wherein the node does not support Mobile IP.
12. (Original) The Foreign Agent as recited in claim 5, wherein the registration request includes a MAC address and an IP address associated with the node.
13. (Previously Amended) The Foreign Agent as recited in claim 5, wherein the attachment acknowledgement message indicates that the node has been registered with the Home Agent via the Foreign Agent when the registration reply indicates that registration of the node with the Home Agent was successful, and wherein the attachment acknowledgement message otherwise indicates that the node has not been registered with the Home Agent via the Foreign Agent.
14. (Original) The Foreign Agent as recited in claim 5, further comprising:

instructions for establishing a communication link between the Foreign Agent and the access point such that the communication link supports proxy Mobile Node service.

15. (Currently Amended) The Foreign Agent as recited in claim 14, wherein the instructions for establishing the communication link between the Foreign Agent and the access point comprise:

instructions for ~~receiving~~ processing an agent solicitation received from the access point, the agent solicitation indicating that the access point supports proxy Mobile Node service; and

instructions for sending an agent advertisement from the Foreign Agent to the access point, the agent advertisement indicating that the Foreign Agent provides proxy Mobile Node service.

16. (Original) The Foreign Agent as recited in claim 15, wherein the agent advertisement includes an agent advertisement extension indicating that the Foreign Agent provides proxy Mobile Node service.

17. (Original) The Foreign Agent as recited in claim 16, wherein the agent advertisement extension includes an IP address field and a MAC address field for identifying an IP address and a MAC address that are shared by two or more Foreign Agents.

18. (Currently Amended) A Foreign Agent that supports Mobile IP, the Foreign Agent being adapted for registering a node with a Home Agent that supports Mobile IP, comprising:

a processor; and

a memory, the memory storing therein the following instructions:

instructions for processing ~~receiving~~ a node attachment arrive message received from an access point, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent;

instructions for composing a registration request on behalf of the node;

instructions for sending the registration request to the Home Agent;

instructions for ~~receiving~~ processing a registration reply received from the Home Agent in response to the registration request;

instructions for sending an attachment acknowledgement message to the access point indicating whether the node can receive packets via the Foreign Agent;

instructions for determining a home subnet for the node from a routing table using an IP address of the node;

instructions for sending a first registration request, the first registration request including a subnet directed broadcast address identifying the determined home subnet;

instructions for processing ~~receiving~~ a registration reply received from one or more Home Agents, each registration reply including an IP address for the associated Home Agent; and

instructions for sending a second registration request to one of the Home Agents, the second registration request including the IP address for the one of the Home Agents.

19. (Original) The Foreign Agent as recited in claim 18, wherein the IP address of the node is assigned by a DHCP server.

20. (Currently Amended) A Foreign Agent that supports Mobile IP, the Foreign Agent being adapted for de-registering a node with a Home Agent that supports Mobile IP, comprising:

a processor; and

a memory, the memory storing therein the following instructions:

instructions for ~~receiving~~ processing a node attachment leave message received from an access point, the node attachment leave message indicating that the node is no longer in a vicinity of the Foreign Agent;

instructions for composing a de-registration message on behalf of the node;

instructions for sending the de-registration message to the Home Agent; and

instructions for updating a visitor table to indicate that the node is no longer visiting the Foreign Agent.

21. (Previously Amended) The Foreign Agent as recited in claim 20, further comprising:

instructions for sending an attachment acknowledgement message to the access point indicating that the node can no longer receive packets via the Foreign Agent.

22. (Original) The Foreign Agent as recited in claim 20, wherein the node supports Mobile IP.

23. (Original) The Foreign Agent as recited in claim 20, wherein the node does not support Mobile IP.

24. (Currently Amended) An access point adapted for communicating with a Foreign Agent that supports Mobile IP and adapted for redirecting packets received from a node that has registered with a Home Agent that supports Mobile IP via the Foreign Agent, comprising:

a processor; and

a memory, the memory storing therein the following instructions:

instructions for detecting the node when it is in a vicinity of the Foreign Agent;

instructions for sending a node attachment arrive message to the Foreign Agent, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent; and

instructions for ~~receiving~~ processing an attachment acknowledgement message received from the Foreign Agent, the attachment acknowledgement message indicating whether

the node has been registered with the Home Agent via the Foreign Agent, thereby enabling the node to receive packets via the Foreign Agent.

25. (Previously Amended) The access point as recited in claim 24, wherein the attachment acknowledgement message indicates that the access point is instructed to provide fixed wireless connectivity when in a first state and to provide proxy mobility service when in a second state.

26. (Original) The access point as recited in claim 24, wherein the node supports Mobile IP.

27. (Original) The access point as recited in claim 24, wherein the node does not support Mobile IP.

28. (Original) The access point as recited in claim 24, further comprising:

instructions for updating a remap table with an entry indicating that a destination MAC address specified in a packet received from the node is to be remapped to a MAC address of the Foreign Agent.

29. (Original) The access point as recited in claim 24, further comprising:

instructions for intercepting a packet addressed from the node to a destination MAC address; and

instructions for redirecting the packet to a MAC address of the Foreign Agent.

30. (Original) The access point as recited in claim 24, further comprising:

instructions for sending a node attachment leave message to the Foreign Agent, the node attachment leave message indicating that the node is no longer in a vicinity of the Foreign Agent.

31. (Currently Amended) The access point as recited in claim 30, further comprising:
instructions for ~~receiving~~ processing an attachment acknowledgement message received from the Foreign Agent, the attachment acknowledgement message indicating that the node is no longer registered with the Home Agent via the Foreign Agent.

32. (Original) The access point as recited in claim 30, further comprising:
instructions for removing an entry from a remap table, the entry indicating that packets addressed from the node to a destination MAC address are to be remapped to a MAC address of the Foreign Agent.

33. (Currently Amended) A computer-readable medium storing thereon computer-readable instructions for registering a node visiting a Foreign Agent that supports Mobile IP with a Home Agent that supports Mobile IP, comprising:

instructions for processing ~~receiving~~ a node attachment message received from an access point, the node attachment message indicating that the node is in a vicinity of the Foreign Agent when in a first state and that the node is not in a vicinity of the Foreign Agent when in a second state;

instructions for initiating registration on behalf of the node when the node attachment message is in the first state; and

instructions for initiating de-registration on behalf of the node when the node attachment message is in the second state.

34. (Currently Amended) A computer-readable medium storing thereon computer-readable instructions for registering a node that is visiting a Foreign Agent that supports Mobile IP with a Home Agent that supports Mobile IP, comprising:

instructions for ~~receiving~~ processing a node attachment arrive message received from an access point, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent;

instructions for composing a registration request on behalf of the node;

instructions for sending the registration request to the Home Agent;

instructions for processing ~~receiving~~ a registration reply received from the Home Agent in response to the registration request; and

instructions for sending an attachment acknowledgement message to the access point indicating whether the node has been registered with the Home Agent via the Foreign Agent, thereby enabling the node to receive packets via the Foreign Agent.

35. (Currently Amended) A computer-readable medium storing thereon computer-readable instructions for de-registering a node that was visiting a Foreign Agent that supports Mobile IP with a Home Agent that supports Mobile IP, comprising:

instructions for ~~receiving~~ processing a node attachment leave message received from an access point, the node attachment leave message indicating that the node is no longer in a vicinity of the Foreign Agent;

instructions for composing a de-registration message on behalf of the node;

instructions for sending the de-registration message to the Home Agent; and

instructions for updating a visitor table to indicate that the node is no longer visiting the Foreign Agent.

36. (Currently Amended) A Foreign Agent that supports Mobile IP, the Foreign Agent being adapted for registering a node with a Home Agent that supports Mobile IP, comprising:

means for ~~receiving~~ processing a node attachment message received from an access point, the node attachment message indicating that the node is in a vicinity of the Foreign Agent when in a first state and that the node is not in a vicinity of the Foreign Agent when in a second state;

means for initiating registration on behalf of the node when the node attachment message is in the first state; and

means for initiating de-registration on behalf of the node when the node attachment message is in the second state.

37. (Currently Amended) A Foreign Agent that supports Mobile IP, the Foreign Agent being adapted for registering a node with a Home Agent that supports Mobile IP, comprising:

means for ~~receiving~~ processing a node attachment arrive message received from an access point, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent;

means for composing a registration request on behalf of the node;

means for sending the registration request to the Home Agent;

means for ~~receiving~~ processing a registration reply received from the Home Agent in response to the registration request; and

means for sending an attachment acknowledgement message to the access point indicating whether the node is registered with the Home Agent via the Foreign Agent, thereby enabling the node to receive packets via the Foreign Agent.

38. (Currently Amended) A Foreign Agent that supports Mobile IP, the Foreign Agent being adapted for de-registering a node with a Home Agent that supports Mobile IP, comprising:

means for ~~receiving~~ processing a node attachment leave message received from an access point, the node attachment leave message indicating that the node is no longer in a vicinity of the Foreign Agent;

means for composing a de-registration message on behalf of the node;

means for sending the de-registration message to the Home Agent; and

means for updating a visitor table to indicate that the node is no longer visiting the Foreign Agent.

39. (Currently Amended) An access point adapted for communicating with a Foreign Agent that supports Mobile IP and being adapted for redirecting packets received from a node that has registered with a Home Agent that supports Mobile IP via the Foreign Agent, comprising:

means for detecting the node when it is in a vicinity of the Foreign Agent;

means for sending a node attachment arrive message to the Foreign Agent, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent; and

means for ~~receiving~~ processing an attachment acknowledgement message received from the Foreign Agent, the attachment acknowledgement message indicating whether the node is registered with the Home Agent via the Foreign Agent, thereby enabling the node to receive packets via the Foreign Agent.

40. (Previously Added) The access point as recited in claim 24, wherein the attachment acknowledgement message further indicates whether the node has access to a subnet of the Foreign Agent.

41. (Previously Added) The computer-readable medium as recited in claim 34, wherein the attachment acknowledgement message further indicates whether the node has access to a subnet of the Foreign Agent.

42. (Previously Added) The Foreign Agent as recited in claim 37, wherein the attachment acknowledgement message further indicates whether the node has access to a subnet of the Foreign Agent.

43. (Previously Added) The access point as recited in claim 39, wherein the attachment acknowledgement message further indicates whether the node has access to a subnet of the Foreign Agent.

Please **ADD** new claims as follows:

44. (New) In a Foreign Agent that supports Mobile IP, a method of initiating registration of a node with a Home Agent that supports Mobile IP, comprising:

receiving a node attachment message received from an access point, the node attachment message indicating that the node is in a vicinity of the Foreign Agent when in a first state and that the node is not in a vicinity of the Foreign Agent when in a second state;

processing the node attachment message received from the access point.

initiating registration on behalf of the node when the node attachment message is in the first state; and

initiating de-registration on behalf of the node when the node attachment message is in the second state.

45. (New) In a Foreign Agent that supports Mobile IP, a method of registering a node with a Home Agent that supports Mobile IP, comprising:

receiving a node attachment arrive message received from an access point, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent;

processing the node attachment arrive message received from the access point;

- composing a registration request on behalf of the node;
- sending the registration request to the Home Agent;

- processing a registration reply received from the Home Agent in response to the registration request; and

- sending an attachment acknowledgement message to the access point indicating whether the node has been registered with the Home Agent via the Foreign Agent, thereby enabling the node to receive packets via the Foreign Agent.

46. (New) In a Foreign Agent that supports Mobile IP, a method of de-registering a node with a Home Agent that supports Mobile IP, comprising:

- receiving a node attachment leave message received from an access point, the node attachment leave message indicating that the node is no longer in a vicinity of the Foreign Agent;

- processing the node attachment leave message received from the access point;

- composing a de-registration message on behalf of the node;

- sending the de-registration message to the Home Agent; and

- updating a visitor table to indicate that the node is no longer visiting the Foreign Agent.

47. (New) In an access point adapted for communicating with a Foreign Agent that supports Mobile IP and adapted for redirecting packets received from a node that has registered with a Home Agent that supports Mobile IP via the Foreign Agent, a method of registering the node with the Home Agent, comprising:

- detecting the node when it is in a vicinity of the Foreign Agent;

- sending a node attachment arrive message to the Foreign Agent, the node attachment arrive message indicating that the node is in a vicinity of the Foreign Agent;
- and